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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/634,350 | 08/04/2003 | John Stephen Smith | 03424.P007D | 8826 |

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| EXAMINER |
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MARKHAM, WESLEY D

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------------------|------------------------------|--|
| Office Action Summary | Application No. 10/634,350 | Applicant(s) SMITH ET AL. | |
| | Examiner Wesley D. Markham | Art Unit 1762 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 29-37 is/are pending in the application.
- 4a) Of the above claim(s) 1-13, 29, 36 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/4/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group III, **Claims 30 – 35**, in the reply filed on 8/22/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1 – 13, 29, 36, and 37 are withdrawn from further consideration by the examiner as being drawn to a non-elected invention. Claims 1 – 13 and 29 – 37 remain pending in U.S. Application Serial No. 10/634,350, which is a divisional of 09/432,291 (filed on 11/2/1999, now USPN 6,623,579), and an Office action on the merits follows.

Information Disclosure Statement

2. The IDS filed by the applicant on 8/4/2003 is acknowledged by the examiner and the references listed thereon have been considered as indicated on the attached copies of the PTO-892 forms from parent application 09/432,291.

Drawings

3. The drawings (18 sheets) filed by the applicant on 8/4/2003 are acknowledged and approved by the examiner.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.
5. The lengthy specification (43 pages, exclusive of the claims) has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
6. The disclosure is objected to because of the following informalities:
 - Page 4: The descriptions of Figures 1A and 1B appear to be reversed and therefore do not accurately describe Figures 1A and 1B of the instant application.
 - Page 25, line 16: The phrase, "U.S. Patent Application Serial No. _____" is missing the associated serial number.
 - Pages 29, 32, 38, and 40: The use of the trademarks TEFLON and NANOBLOCK has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to

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prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 30 – 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Oda et al. (USPN 3,967,004).
9. Regarding independent **Claim 30**, Oda et al. teaches a method of assembling a structure (i.e., a fiber-reinforced resin compound coating) onto a substrate, the method comprising (1) dispensing a thickening agent of magnesium oxide, calcium oxide, etc. suspended in a liquid polyester resin (i.e., a slurry comprising a fluid and a plurality of elements), and (2) projecting an unsaturated polyester resin (i.e., a second fluid) through a nozzle toward the substrate (Abstract, Figures 1 and 2, Col.2, line 9 – Col.4, line 32). In this case, the oxide thickening agent (Col.3, lines 13 – 32) and/or the filler (Col.2, lines 39 – 41) are the "plurality of elements" in the slurry. As the composite coating material of Oda et al. is sprayed to form a sheet on the substrate (Col.3, line 36 – Col.4, line 32), the entire substrate surface is

considered to be a "receptor region" or to comprise "receptor regions", and the plurality of elements (i.e., the oxides and fillers) in the composite coating are mated thereto (i.e., are designed to mate with the substrate surface / receptor region(s)). The plurality of elements perform the function of filling and/or thickening the composition and therefore are "functional elements". Regarding **Claim 31**, both the first and second fluids comprise a liquid polyester resin (i.e., the same solvent) (Abstract, Col.2, lines 9 – 39, Col.3, lines 17 – 32). Regarding **Claim 32**, the second fluid comprises a zinc stearate releasing agent (i.e., a surfactant). Regarding **Claim 33**, all of the fluids are projected toward the substrate surface simultaneously (i.e., the second fluid is projected toward the substrate while the coating is being formed, or in other words, while the plurality of elements mates with receptor regions) (Figures 1 and 2, Col.3, line 46 – Col.4, line 33).

10. Claims 30 – 32, 34, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Roeyen (USPN 4,397,325).

11. Regarding independent **Claim 30**, Van Roeyen teaches a method of assembling abrasive particles / grit (i.e., a structure) onto a substrate (Figures 1, 4, 5, and 6A), the method comprising (1) dispensing a slurry comprising a first fluid and a plurality of elements (e.g., abrasive aluminum oxide grits / particles / granules) that are designed to be bonded / anchored to the substrate surface (i.e., designed to mate with receptor region(s) on the substrate) (Col.3, line 55 – Col.4, line 53, Col.6, lines 44 – 47), and (2) projecting a second fluid through a nozzle toward the substrate

(Figure 6A, Col.4, lines 54 – 65). The granules function as an abrasive (Col.4, lines 3 – 11) and therefore are “functional elements”. Regarding **Claim 31**, both fluids comprise the same solvent (Col.4, lines 12 – 42 and 62 – 65). Regarding **Claim 32**, the fluids both comprise an epoxy resin to anchor the particles on the base (i.e., a bonding agent) (Col.4, lines 12 – 65, Col.6, lines 44 – 47). Regarding **Claims 34 and 35**, Van Roeyen also teaches immersing the abrasive coated substrates in a variety of solutions “to clean the aluminum oxide grits” (Figure 6B, Col.5, lines 1 – 30). It is the examiner’s position that such an immersion step(s) would have inherently resulted in the cleaning solution(s) pushing / wiping off loose abrasive particles from the base.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each

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claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Roeyen in view of Dudek et al. (USPN 5,167,989).

15. As an alternative to the reasoning presented above, Van Roeyen teaches all the limitations of **Claims 34 and 35** as set forth above in paragraph 11, except for a method further comprising pushing / wiping the excess of the plurality of elements (i.e., the abrasive particles of Van Roeyen) off the substrate after adhering the elements to the substrate. However, Dudek et al. teaches that, in the art of attaching / bonding particulate coating material to a substrate, the excess particles are removed by wiping, blowing with a gas, etc. after coating (Abstract, Col.1, lines 25 – 29, Col.2, lines 25 – 40, Col.4, lines 10 – 20). Therefore, it would have been obvious to one of ordinary skill in the art to wipe and/or blow off any excess abrasive particles that are not adequately bonded to the substrate of Van Roeyen after the coating processes, thereby ensuring a high quality end-product without loose, insufficiently bonded abrasive grains.

16. Claims 30, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (USPN 5,545,291) in view of DiMaio et al. (USPN 5,403,624).

17. Regarding **Claims 30, 31, and 33**, Smith et al. teaches a method of fluidic self assembly (FSA) (i.e., a method of assembling a structure on a substrate), the method comprising dispensing a slurry comprising a first fluid and a plurality of elements, each of which is designed to mate with a receptor region on the substrate and each of which comprises a functional element (Abstract, Figures 6 – 8, Col.1, lines 10 – 22, Col.3, lines 5 – 34, Col.5, lines 4 – 10, Col.6, lines 29 – 35, Col.7, lines 16 – 62, Col.12, line 50 – Col.13, line 11, Col.14, lines 8 – 10). Smith et al. does not explicitly teach projecting a second fluid through a nozzle toward the substrate. However, Smith et al. does teach that the slurry is transferred evenly over the substrate surface by pouring, spreading, using a pipet, or using any other type of vessel and/or apparatus capable of evenly transferring the slurry over the top surface (Col.7, lines 40 – 51). DiMaio et al. teaches that a plurality of spray nozzles may be employed in a coating process to provide a more uniform coating and an increased production rate (Col.2, lines 55 – 66). Therefore, it would have been obvious to one of ordinary skill in the art to utilize a plurality of pipets (i.e., “nozzles”) or other nozzles to transfer the slurry of Smith et al. over the top surface of the substrate (instead of using a single pipet) in order to provide more uniform slurry distribution and an increased production rate due to the use of the additional nozzle(s). In using multiple pipets / nozzles in the manner suggested above, “a second fluid” is projected through a nozzle toward the substrate, the first and second fluids comprise the same solvent (i.e., because the slurry dispensed from each nozzle is the same), and the second fluid is projected toward the substrate while the

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plurality of elements mate with the receptor regions (i.e., because the fluids are simultaneously applied), as required by Claims 30, 31, and 33.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D. Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



WDM

Wesley D Markham
Examiner
Art Unit 1762



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER